

ARCADIA PUBLIC SCHOOLS

Science Curriculum

Science Philosophy

Science is essential for helping students understand, evaluate, and apply scientific inquiry and principles at increasingly higher levels of sophistication. The study of science improves students' competencies across all areas of the school's curriculum to prepare them to be college and career ready.

Science Exit Outcomes

By the end of the twelfth grade, students at Arcadia Public Schools will be able to....

1. Develop and apply an understanding of science through the use of scientific inquiry and technology.
2. Develop and apply an understanding of physical science through the study of matter, force, motion, and energy.
3. Develop and apply an understanding of life science through an evaluation of living systems and their major influence, heredity.
4. Develop and apply an understanding of ecosystems and biodiversity.
5. Develop an understanding of space, its major components and Earth's role within the Universe.
6. Develop and apply an understanding of Earth's structures, processes, and history.

Science Strands

1. Physical Science
 - A. Forces and Interactions
 - B. Waves
 - C. Structures and Properties of Matter
 - D. Energy
 - E. Chemical Reactions
2. Life Science
 - A. Structure, Function, and Information Processing
 - B. Interdependent Relationships in Ecosystems
 - C. Matter and Energy in Organisms and Ecosystems
 - D. Inheritance and Variation
 - E. Natural Selection and Adaptation

- 3. Earth and Space Science
 - A. Space Systems
 - B. Weather and Climate
 - C. Earth's Systems
 - D. History of Earth Sustainability

Nebraska State Science Standards

Kindergarten

Physical Science

- K.1.1 Gather, analyze, and communicate evidence of forces and their interactions.

Life Science

- K.7.2 Gather, analyze, and communicate evidence of interdependent relationships in ecosystems.

Earth and Space Science

- K.12.3 Gather, analyze, and communicate evidence of weather and climate.

1st Grade

Physical Science

- 1.2.1 Gather, analyze, and communicate evidence of light and sound waves.

Life Science

- 1.6.2 Gather, analyze, and communicate evidence to show the relationship between structure and function in living things.

Earth and Space Science

- 1.11.3 Gather, analyze, and communicate evidence of patterns and cycles of space systems.

2nd Grade

Physical Science

2.3.1 Gather, analyze, and communicate evidence of the structure, properties, and interactions of matter.

Life Science

2.7.2 Gather, analyze, and communicate evidence of interdependent relationships in ecosystems.

Earth and Space Science

2.13.3 Gather, analyze, and communicate evidence of the processes that shape the earth.

3rd Grade

Physical Science

3.1.1 Gather, analyze, and communicate evidence of forces and their interactions.

Life Science

3.7.2 Gather, analyze, and communicate evidence an understanding of the interdependent relations in ecosystems.

3.9.3 Gather, analyze, and communicate evidence an understanding of inheritance and variation of traits through life cycles and environmental influences.

Earth and Space Science

3.12.4 Gather, analyze, and communicate evidence an understanding of weather and climate.

4th Grade

Physical Science

4.2.1 Gather, analyze, and communicate evidence of waves and the information they transfer.

4.4.2 Gather, analyze, and communicate evidence of energy conservation and transfer.

Life Science

4.6.3 Gather, analyze, and communicate evidence an understanding of structure, function, and information processing of living things.

Earth and Space Science

4.13.4 Gather, analyze, and communicate evidence an understanding of Earth's systems and processes that shape the Earth.

5th Grade

Physical Science

5.3.1 Gather, analyze, and communicate evidence of structure and properties of matter.

Life Science

5.8.2 Gather, analyze, and communicate evidence of an understanding of matter and energy in organisms and ecosystems.

Earth and Space Science

5.11.3 Gather, analyze, and communicate evidence understanding of space systems: Earth's stars and solar system.

5.13.4 Gather, analyze, and communicate understanding of Earth's systems.

6th Grade

Physical Science

6.4.1 Gather, analyze, and communicate evidence of energy.

Life Science

6.6.2 Gather, analyze, and communicate evidence of the relationship between structure and function in living things.

6.9.3 Gather, analyze, and communicate evidence of the inheritance and variation of traits.

Earth and Space Science

6.12.4 Gather, analyze, and communicate evidence of factors and interactions that affect weather and climate.

6.13.5 Gather, analyze, and communicate evidence of the flow of energy and cycling of matter associated with Earth's materials and processes.

7th Grade

Physical Science

- 7.3.1 Gather, analyze, and communicate evidence of the structure, properties, and interactions of matter.
- 7.5.2 Gather, analyze, and communicate evidence of chemical reactions.

Life Science

- 7.7.3 Gather, analyze, and communicate evidence of interdependent relationships in ecosystems.
- 7.8.4 Gather, analyze, and communicate evidence of the flow of energy and cycling of matter in organisms and ecosystems.

Earth and Space Science

- 7.13.5 Gather, analyze, and communicate evidence of the flow of energy and cycling of matter associated with Earth's materials and processes.
- 7.14.6 Gather, analyze, and communicate evidence to explain Earth's history.

8th Grade

Physical Science

- 8.1.1 Gather, analyze, and communicate evidence of forces and interactions.
- 8.2.2 Gather, analyze, and communicate evidence of waves and electromagnetic radiation.
- 8.4.3 Gather, analyze, and communicate evidence of energy.

Life Science

- 8.9.4 Gather, analyze, and communicate evidence of the inheritance and variation of traits.
- 8.10.5 Gather, analyze, and communicate evidence of natural selection and adaptations.

Earth and Space Science

- 8.11.6 Gather, analyze, and communicate evidence of the interactions among bodies in space.
- 8.14.7 Gather, analyze, and communicate evidence to explain Earth's history.

9th-12th Grades

Physical Science

- HS.1.1 Gather, analyze, and communicate evidence of forces and interactions.
- HS.2.2 Gather, analyze, and communicate evidence of interactions of waves.
- HS.3.3 Gather, analyze, and communicate evidence of the structure, properties, and interactions of matter.
- HS.4.4 Gather, analyze, and communicate evidence of the interactions of energy.
- HS.5.5 Gather, analyze, and communicate evidence of chemical reactions.

Life Science

- HS.6.1 Gather, analyze, and communicate evidence of the relationship between structure and function in living things.
- HS.7.2 Gather, analyze, and communicate evidence of interdependent relationships in ecosystems.
- HS.8.3 Gather, analyze, and communicate evidence of the flow of energy and cycling of matter in organisms and ecosystems.
- HS.9.4 Gather, analyze, and communicate evidence of the inheritance and variation of traits.
- HS.10.5 Gather, analyze, and communicate evidence of biological evolution.

Earth and Space Science

- HS.11.1 Gather, analyze, and communicate evidence to defend that the universe changes over time.
- HS.12.2 Gather, analyze, and communicate evidence to support that Earth's climate and weather are influenced by energy flow through Earth systems.
- HS.13.3 Gather, analyze, and communicate evidence to defend the position that Earth's systems are interconnected and impact one another.
- HS.13.4 Gather, analyze, and communicate evidence to interpret Earth's history.
- HS.13.5 Gather, analyze, and communicate evidence to describe the interactions between society, environment, and economy.

Science Curriculum Matrix

By the end of the twelfth grade, students at Arcadia Public Schools will be able to....

1. Physical Science

Identifier	Objective	K	1st	2nd	3rd	4th	5th	6th	Science 7	Science 8	Science 9	Biology	Chemistry	Human Anatomy	Medical Terminology
		1.1.1	Gather, analyze, and communicate evidence of light and sound waves. (1.1.1)	<i>I</i>	<i>D</i>	<i>M</i>									
4.1.1	Gather, analyze, and communicate evidence of waves and the information they transfer. (4.2.1)				<i>I</i>	<i>D</i>	<i>M</i>								
4.1.2	Gather, analyze, and communicate evidence of energy conservation and transfer. (4.4.2)				<i>I</i>	<i>M</i>									
5.1.1	Gather, analyze, and communicate evidence of structure and properties of matter. (2.3.1; 5.3.1)	<i>I</i>	<i>D</i>	<i>D</i>	<i>D</i>	<i>D</i>	<i>M</i>								
8.1.2	Gather, analyze, and communicate evidence of waves and electromagnetic radiation. (8.2.2)						<i>I</i>	<i>D</i>	<i>D</i>	<i>M</i>					
8.1.3	Gather, analyze, and communicate evidence of energy. (6.4.1; 8.4.3)					<i>I</i>	<i>D</i>	<i>D</i>	<i>D</i>	<i>D</i>	<i>D</i>		<i>M</i>		
12.1.1	Gather, analyze, and communicate evidence of forces and their interactions. (K.1.1; 3.3.1; 8.1.1; HS.1.1)	<i>I</i>	<i>D</i>	<i>D</i>	<i>D</i>	<i>D</i>	<i>D</i>	<i>D</i>	<i>D</i>	<i>D</i>	<i>M</i>				
12.1.2	Gather, analyze, and communicate evidence of interactions of waves. (HS.2.2)								<i>I</i>	<i>D</i>	<i>D</i>		<i>M</i>		
12.1.3	Gather, analyze, and communicate evidence of the structure, properties, and interactions of matter. (7.3.1; HS.3.3)					<i>I</i>	<i>D</i>	<i>D</i>	<i>D</i>	<i>D</i>	<i>D</i>	<i>D</i>	<i>M</i>		
12.1.4	Gather, analyze, and communicate evidence of the interactions of energy. (HS.4.4)						<i>I</i>	<i>D</i>	<i>D</i>	<i>D</i>	<i>D</i>	<i>D</i>	<i>M</i>		
12.1.5	Gather, analyze, and communicate evidence of chemical reactions. (7.5.2; HS.5.5)						<i>I</i>	<i>D</i>	<i>D</i>	<i>D</i>	<i>D</i>	<i>D</i>	<i>M</i>		

2. Life Science

Identifier	Objective	K	1st	2nd	3rd	4th	5th	6th	Science 7	Science 8	Science 9	Biology	Chemistry	Human Anatomy	Medical Terminology
		1.2.1	Gather, analyze, and communicate evidence to show the relationship between structure and function in living things. (1.6.2)	<i>I</i>	<i>D</i>	<i>M</i>									
3.2.2	Gather, analyze, and communicate evidence an understanding of inheritance and variation of traits through life cycles and environmental influences. (3.9.3)		<i>I</i>	<i>D</i>	<i>M</i>										
4.1.1	Gather, analyze, and communicate evidence an understanding of structure, function, and information processing of living things. (4.6.3)			<i>I</i>	<i>D</i>	<i>M</i>									
7.2.1	Gather, analyze, and communicate evidence an understanding of the interdependent relations in ecosystems. (K.7.2; 2.7.2; 3.7.2; 7.7.3)	<i>I</i>	<i>D</i>	<i>D</i>	<i>D</i>	<i>D</i>	<i>D</i>	<i>D</i>	<i>D</i>	<i>M</i>					
12.2.1	Gather, analyze, and communicate evidence of the relationship between structure and function in living things. (6.2.1; HS.6.1)					<i>I</i>	<i>D</i>	<i>D</i>	<i>D</i>	<i>D</i>		<i>M</i>		<i>M</i>	<i>M</i>
12.2.2	Gather, analyze, and communicate evidence an understanding of the interdependent relations in ecosystems. (K.7.2; 2.7.2; 3.7.2; 7.7.3; HS.7.2)	<i>I</i>	<i>D</i>	<i>D</i>	<i>D</i>	<i>D</i>	<i>D</i>	<i>D</i>	<i>D</i>	<i>D</i>		<i>M</i>		<i>M</i>	
12.2.3	Gather, analyze, and communicate evidence of the flow of energy and cycling of matter in organisms and ecosystems. (5.8.2; 7.8.4; HS.7.3)					<i>I</i>	<i>D</i>	<i>D</i>	<i>D</i>	<i>D</i>		<i>M</i>		<i>M</i>	
12.2.4	Gather, analyze, and communicate evidence of the inheritance and variation of traits. (6.9.3; 8.9.4; HS.9.4)					<i>I</i>	<i>D</i>	<i>D</i>	<i>D</i>	<i>D</i>		<i>M</i>		<i>M</i>	<i>M</i>
12.2.5	Gather, analyze, and communicate evidence of biological evolution. (8.10.5; HS.10.5)							<i>I</i>	<i>D</i>	<i>D</i>		<i>M</i>		<i>M</i>	

3. Earth and Space Science

Identifier	Objective	K	1st	2nd	3rd	4th	5th	6th	Science 7	Science 8	Science 9	Biology	Chemistry	Human Anatomy	Medical Terminology
1.3.1	Gather, analyze, and communicate evidence of patterns and cycles of space systems. (1.11.3)	<i>I</i>	<i>D</i>	<i>M</i>											
2.3.1	Gather, analyze, and communicate evidence of the processes that shape the Earth. (2.13.3)		<i>I</i>	<i>D</i>	<i>M</i>										
3.3.1	Gather, analyze, and communicate evidence of an understanding of weather and climate. (K.12.3; 3.12.4)	<i>I</i>	<i>D</i>	<i>D</i>	<i>M</i>										
4.3.1	Gather, analyze, and communicate evidence of an understanding of Earth's systems and processes that shape the Earth. (4.13.4)				<i>I</i>	<i>D</i>	<i>M</i>								
5.3.1	Gather, analyze, and communicate evidence understanding of space systems: Earth's stars and solar system. (5.11.3)				<i>I</i>	<i>D</i>	<i>M</i>								
5.3.2	Gather, analyze, and communicate evidence understanding of Earth's systems. (5.13.4)					<i>I</i>	<i>D</i>	<i>M</i>							
6.3.1	Gather, analyze, and communicate evidence of factors and interactions that affect weather and climate. (6.12.4)					<i>I</i>	<i>D</i>	<i>M</i>							
7.3.1	Gather, analyze, and communicate evidence of the flow of energy and cycling of matter associated with Earth's materials and processes. (6.13.5; 7.13.5)						<i>I</i>	<i>D</i>	<i>D</i>	<i>M</i>					
8.3.1	Gather, analyze, and communicate evidence of the interactions among bodies in space. (8.11.6)					<i>I</i>	<i>D</i>	<i>D</i>	<i>D</i>	<i>M</i>					
8.3.2	Gather, analyze, and communicate evidence to explain Earth's history. (8.14.6; 8.14.7)							<i>I</i>	<i>D</i>	<i>M</i>					
12.3.1	Gather, analyze, and communicate evidence to defend that the universe changes over time. (HS.11.1)							<i>I</i>	<i>D</i>	<i>D</i>		<i>M</i>			

Identifier	Objective	K	1st	2nd	3rd	4th	5th	6th	Science 7	Science 8	Science 9	Biology	Chemistry	Human Anatomy	Medical Terminology
12.3.2	Gather, analyze, and communicate evidence to support that Earth's climate and weather are influenced by energy flow through Earth systems. (HS.12.2)						<i>I</i>	<i>D</i>	<i>D</i>	<i>D</i>	<i>M</i>				
12.3.3	Gather, analyze, and communicate evidence to defend the position that Earth's systems are interconnected and impact one another. (HS.13.3)							<i>I</i>	<i>D</i>	<i>D</i>		<i>M</i>			
12.3.4	Gather, analyze, and communicate evidence to interpret Earth's history. (HS.13.4)							<i>I</i>	<i>D</i>	<i>D</i>	<i>M</i>				
12.3.5	Gather, analyze, and communicate evidence to describe the interactions between society, environment, and economy. (HS.13.5)								<i>I</i>	<i>D</i>	<i>D</i>	<i>M</i>			

Approved: April 11, 2022